

What is claimed is:

1. An apparatus for generating a Carrier-Suppressed Return-to-Zero (CS-RZ) signal, comprising:

5 a mixer generating a modulator input by mixing data with a half clock signal;

a Low Pass Filter (LPF) band-limiting the modulator input data, which has been provided from the mixer, into low frequency band data;

10 a driver amplifier amplifying the modulator input data generated by the mixing of the mixer and the band-limiting of the LPF; and

an external modulator generating a CS-RZ signal, in which phases of adjacent pulses are inverted, by applying
15 bias voltage to the modulator input data, which has been amplified by the driver amplifier, to be placed at a null point of a transfer function of the external modulator.

2. The apparatus of claim 1, wherein the mixer adjusts
20 logical data "0" to data 0 V and adjusts a clock signal to symmetrically swing around 0 V.

3. The apparatus of claim 1, wherein:

the band limiting reduces an optical spectrum
25 bandwidth of the CS-RZ signal while reducing noise of the signal;

the decrease of the optical spectrum bandwidth improves dispersion characteristics of the optical signal; and

the bandwidth of the LPF is adjusted to increase
5 dispersion tolerance of the optical signal while minimizing distortion of the optical signal.

4. The apparatus of claim 1, wherein the driver amplifier performs amplification so that logical data "0" becomes 0 V
10 and logical data "1" becomes $\pm V\pi$.

5. The apparatus of claim 1, wherein the LPF is an electrical filter designed to reduce the spectrum of the optical signal and improve the dispersion characteristics of
15 the optical signal.